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Studies on the Rocky Mountain flora—XVI

PER AXEL RYDBERG

Salix Watsonii (Bebb) Rydb.

Salix cordata Watsonii Bebb, Bot. Calif. 2: 86. 1880.

Salix flava Rydb. Bull. Torrey Club 28: 273. 1901. Not *S. flava* Schoepf. 1796.

Chenopodium oblongifolium (S. Wats.) Rydb.

Chenopodium leptophyllum oblongifolium S. Wats. Proc. Am. Acad. 9: 95. 1873.

Atriplex subspicata (Nutt.) Rydb.

Chenopodium subspicatum Nutt. Gen. Am. 1: 199. 1818.

Atriplex patula subspicata S. Wats. Proc. Am. Acad. 9: 107. 1873.

Rumex praecox Rydb. sp. nov.

Perennial with a thick fleshy rootstock; stem 2–3 dm. high, striate; basal leaves petioled, rather thick; petioles 5–10 cm. long; blades oval or elliptic, 4–10 cm. long, 2–4 cm. wide, rounded at both ends; stem-leaves similar, but smaller, short-petioled and more acute; flowers perfect, in terminal and axillary panicles; perianth-lobes oval, rounded at the apex; the outer 1.5 mm., when fully developed about 3 mm. long, the inner 3–5 mm., without tubercles; fruit developed before the perianth-lobes become much enlarged, shining.

This species is related to *R. occidentalis*, but is characterized by its fleshy tuber-like rootstocks and its precocious fruiting.

COLORADO: Grayback mining camps, 1900, *Rydberg & Vreeland* 6328 (type); Bob Creek, La Plata Mountains, 1898, *Baker, Earle & Tracy* 270.

Paronychia brevicuspis (A. Nels.) Rydb.

Paronychia scssiliflora brevicuspis A. Nels. Bull. Torrey Club 26: 237. 1899.

LIMNIA L. (Kongl. Sv. Vet. Ak. Hand. 1746: 130. 1746);
Haw. Syn. Pl. Succ. 11. 1812.

Greene, Howell and Robinson have transferred a number of species from *Claytonia* to *Montia*; but none of them has given any obvious reason. Dr. Greene satisfied himself by transferring the sections ALSINASTRUM, NAIOCRENE and MONTIASTRUM. These evidently come nearest to *Montia* of all the sections of *Claytonia*. Prof. Howell, followed by Dr. Robinson, also transferred the section LIMNIA, and the rhizomatous species of EUCLAYTONIA of Gray. The difference between the two genera *Claytonia* and *Montia* as now limited is practically reduced to the number of ovules; 6 in the former, 3 in the latter. In *Montia* we find now both regular and irregular flowers, free petals and partly united petals, 5 stamens and 3 stamens, opposite stem-leaves and alternate stem-leaves, annuals and perennials, and of the latter several kinds, viz., with horizontal rootstocks, with short stolons bearing offsets, with slender runners bearing cormlets at the ends, or with axillary bulb-lets. In the olden time, *Montia* was easily distinguished from *Claytonia* by its gamopetalous corolla cleft on one side. It may be that all the sections mentioned above should be removed from *Claytonia*, but they should not be transferred to *Montia*, making this genus more unnatural than *Claytonia* ever was. I think that in a family like *Portulacaceae*, in which the modifications in the flowers are so slight, generic characters should to some degree be sought in the general habit. Instead of transferring the sections to *Montia* it would have been better to restore the Linnaean genus *Limnia* (which was adopted by Haworth), and to include in it all the American species of *Montia*, except *M. fontana*; or else to continue the splitting and propose several new genera. The typical Rocky Mountain species of *Limnia* are the following:

Limnia asarifolia (Bong.) Rydb.

Claytonia asarifolia Bong. Veg. Sitcha 137. 1831.

LIMNIA SIBIRICA (L.) Haw. Syn. Pl. Succ. 11. 1812.

Claytonia sibirica L. Sp. Pl. 204. 1753.

Limnia arenicola (Henderson) Rydb.

Claytonia arenicola Henderson, Bull. Torrey Club 22: 49. 1895.

LIMNIA PERFOLIATA (Donn) Haw. Syn. Pl. Succ. 11. 1812.

Claytonia perfoliata Donn, Ind. Hort. Cantab. 25. 1796. — Willd.
Sp. Pl. 1: 1186. 1798.

Limnia depressa (A. Gray) Rydb.

Claytonia parviflora depressa A. Gray, Proc. Am. Acad. 22: 281.
1887.

Limnia parviflora (Dougl.) Rydb.

Claytonia parviflora Dougl.; Hook. Fl. Bor. Am. 1: 225. 1832.

At least two of the species of *Claytonia* transferred to *Montia* are, however, so unlike the rest that they can not very well be included in *Limnia*, but are better regarded as types of distinct genera.

CRUNOCALLIS Rydb. gen. nov.

Procumbent or decumbent water or mud-plants, rooting at the nodes and producing long runners, which develop small globose cormlets at the apex. Leaves several pairs, opposite. Sepals two, nearly equal. Corolla regular. Petals 5, similar and equal. Stamens 5. Ovary 3-ovuled. Capsule 1-3-seeded. Seeds granular-muriculate.

This genus has the flowers of *Claytonia*, but the general habit of *Montia*; the mode of propagation and the seeds are different from both.

Crunocallis Chamissonis (Ledeb.) Rydb.

Claytonia Chamissoi Ledeb.; Spreng. Syst. 1: 790. 1825.

NAIOCRENE (T. & G.) Rydb. gen. nov.

Claytonia § *Naiocrene* T. & G. Fl. N. Am. 1: 201, in part. 1838.

Sarmentose, spreading or decumbent plants, with alternate fleshy leaves, bearing bulblets in their axils. Sepals very unlike, one broad and 2-lobed at the apex. Corolla regular or nearly so. Stamens 5. Ovary 3-ovuled. Seeds 1-3, shining.

Naiocrene parvifolia (Moç.) Rydb.

Claytonia parvifolia Moç.; DC. Prodr. 3: 361. 1828.

EROCALLIS Rydb. gen. nov.

Perennials with globular corms. Radical leaf usually solitary, not present at flowering time. Stem low, with 2 or 3

whorled leaf-like bracts. Sepals 2, somewhat unequal. Petals 3-10, oblong. Capsule oblong-conical, circumscissile.

The genus is closely related to *Claytonia*, and the only distinctive character is the circumscissile capsule. Howell included it in *Oreobroma* and Robinson in *Lewisia*; in both genera, especially the latter, it is out of place on account of its habit.

Erocallis triphylla (S. Wats.) Rydb.

Claytonia triphylla S. Wats. Proc. Am. Acad. **10** : 345. 1875.

Alsinopsis propinqua (Richardson) Rydb.

Arenaria propinqua Richardson, Franklin Journey 738. 1823.

Arenaria verna hirta S. Wats. Bot. King Exp. 41. 1871. Not

A. hirta Wormskj.

Arenaria verna (a)equicaulis A. Nels. Bull. Torrey Club **26** : 352. 1899.

Alsinopsis Rossii (Richardson) Rydb.

Arenaria Rossii Richardson, Franklin Journey 738. 1823.

Alsinopsis quadrivalvis (R. Br.) Rydb.

Arenaria quadrivalvis R. Br. in Parry 1st Voy. app. cclxxi. 1824.

Alsinopsis obtusiloba Rydb.

Arenaria obtusa Torr. Ann. Lyc. N. Y. **2** : 170. 1827. Not

A. obtusa All. 1785.

Arenaria biflora S. Wats. Bibl. Index 94. 1878. Not *A. biflora* L. 1767.

Arenaria sajanensis Robinson, Proc. Am. Acad. **29** : 304. 1894.

Not *A. sajanensis* Willd. 1816.

Delphinium reticulatum (A. Nels.) Rydb.

Delphinium occidentale reticulatum A. Nels. Bull. Torrey Club **27** : 261. 1900.

ODOSTEMON Raf. Am. Monthly Mag. **2** : 265. F 1818.

Mahonia Nutt. Gen. Am. **1** : 211. 1818.

Both *Odostemon* Raf. and *Mahonia* Nutt. were published in the same year, but the former a few months earlier. The Rocky Mountain species are :

Odostemon Aquifolium (Pursh) Rydb.

Berberis Aquifolium Pursh, Fl. Am. Sept. 219. 1814.

Berberis repens Lindl. Bot. Reg. *pl.* 1176. 1828.

Berberis nana Greene, Pittonia **3**: 98. 1896.

Odostemon nutkanus (DC.) Rydb.

Mahonia Aquifolium nutkana DC. Syst. **2**: 20. 1821.

Berberis Aquifolium Lindl. Bot. Reg. *sub pl.* 1176. 1828.

Odostemon nervosus (Pursh) Rydb.

Berberis nervosa Pursh, Fl. Am. Sept. 219. 1814.

Odostemon Fremontii (Torr.) Rydb.

Berberis Fremontii Torr. Bot. Mex. Bound. 30. 1859.

Lepidium crenatum (Greene) Rydb.

Thelypodium crenatum Greene, Pittonia **4**: 20. 1899.

The species was described from flowering specimens, but the ovaries or young fruit were developed enough to indicate the true genus. Dr. Greene was probably led astray by the fact that the specimens were labeled *Thelypodium integrifolium*.

Erysimum asperrimum (Greene) Rydb.

Cheiranthus asperrimus Greene, Pittonia **3**: 133. 1896.

Erysimum pumilum Rydb. Mem. N. Y. Bot. Gard. **1**: 189. 1900.

In my Flora of Montana I took up Nuttall's *E. pumilum* for this species. This was evidently an error into which I was led by Dr. Greene's discussion in Pittonia, *loc. cit.* *E. pumilum* Nutt. remains as yet unknown, but from the description it must be a close relative of *E. nivale* and *E. radicum*, if not one of these species.

Erysimum Bakeri (Greene) Rydb.

Cheiranthus aridus Greene, Pittonia **4**: 198. 1900. Not *C. aridus* A. Nelson. 1899.

Cheiranthus Bakeri Greene, Pittonia **4**: 235. 1901.

Erysimum argillosum (Greene) Rydb.

Cheiranthus argillosus Greene, Pittonia **3**: 136. 1896.

Erysimum amoenum (Greene) Rydb.

Cheiranthus nivalis amoenus Greene, Pittonia 3: 137. 1896.

Lesquerella stenophylla (A. Gray) Rydb.

Vesicaria stenophylla A. Gray, Bost. Jour. Nat. Hist. 6: 149.
1850.

This was included in *L. Fendleri* by Dr. Watson, but I think it well distinct.

Euklisia crassifolia (Greene) Rydb.

Streptanthus crassifolius Greene, Pittonia 3: 227. 1897.

Dr. Greene in Leaflets (1: 81-85. D 1904) took up *Euklisia* of Nuttall, only changing its spelling, but he overlooked that it had already been proposed as a genus in Dr. Small's Flora of the Southeastern United States. About three years ago I intended to publish it as a genus, making *Streptanthus cordatus* Nutt. the type. Unfortunately my notes were never published and forgotten. Dr. Small, who had seen them, took up the name in his flora, giving me the credit for the same. As he published only one species, *E. hyacinthoides*, this becomes the type. Dr. Greene took up the name for a group, to which neither Dr. Small's type nor my intended type (which I also think was Nuttall's) belong. If *Streptanthus* should be split up into as many genera as Dr. Greene suggests, neither his species of *Euklisia* nor those known to Nuttall would fall within *Euklisia*. My intention was only to divide the genus into two genera, *Streptanthus* and *Euklisia*. So limited the latter genus will contain the Rocky Mountain species here given.

Euklisia cordata (Nutt.) Rydb.

Streptanthus cordatus Nutt.; T. & G. Fl. N. Am. 1: 77. 1838.

Euklisia longirostris (S. Wats.) Rydb.

Arabis longirostris S. Wats. Bot. King Exp. 17. 1871.

Streptanthus longirostris S. Wats. Proc. Am. Acad. 25: 127.
1890.

Peritoma Sonorae (A. Gray) Rydb.

Cleome Sonorae A. Gray, Pl. Wright. 2: 16. 1853.

Potentilla platyloba Rydb.

Potentilla bipinnatifida platyloba Rydb. Mem. Dep. Bot. Columbia Univ. 2 : 100. 1898.

This is as distinct from *P. bipinnatifida* as most species of *Potentilla* are from their relatives.

Potentilla rubripes Rydb.

Potentilla rubricaulis Rydb. Mem. Dep. Bot. Columbia Univ. 2 : 101. 1898. Not *P. rubricaulis* Lehm. 1830.

Lehmann's species, for which I mistook this Rocky Mountain plant, is the same as *P. prostrata* Rottb.

Argentina argentea Rydb.

Argentina anserina concolor Rydb. Mem. Dep. Bot. Columbia Univ. 2 : 160. 1898. Not *Potentilla anserina concolor* Ser. 1825.

The European plant to which this was referred differs in having more deeply and more sharply toothed leaflets, and smaller flowers.

Fragaria ovalis (Lehm.) Rydb.

Potentilla ovalis Lehm. Ind. Sem. Hort. Bot. Hamb. 1849 : 9. 1849.

Fragaria firma Rydb. Mem. Dep. Bot. Columbia Univ. 2 : 184. 1898.

Dr. Wolf, of Dresden, Germany, has called my attention to the fact that *P. ovalis* Lehm. is no *Potentilla* at all. Prof. Lehmann did not cite any type, but his herbarium shows that it was *Fendler 206*, which I included in *Fragaria firma*.

Fallugia acuminata (Wooton) Rydb.

Fallugia paradoxa acuminata Wooton, Bull. Torrey Club 25 : 306. 1898.

Prunus melanocarpa (A. Nelson) Rydb.

Cerasus demissa melanocarpa A. Nels. Bot. Gaz. 34 : 25. 1902.

The common Rocky Mountain tree is well distinct from the original *Cerasus demissa* Nutt. or *Prunus demissa* Walp. The latter, which was from the Columbia Valley, has thin, very pubescent

leaves, and is more related to the eastern *P. virginiana*. *P. melano-carpa* is rather nearer the Mexican species known as *P. Copalin*, and it is sometimes very hard to distinguish it from that species.

ANISOLOTUS Bernh. Sem. Hort. Erf. 1837. — Linnaea
12 : Litt. Ber. 75. 1838.

I think that this genus, well characterized by Bernhardi, should be restored. It is well distinct from the Old World *Lotus* and from *Hosackia*. I think that Dr. Greene's merging all our North American species usually known as *Hosackia* into *Lotus* was very unfortunate, for we do not have any native species which could be included in *Lotus*, even if made broad enough to include *Tetragonolobus* and other Old World genera.

The Rocky Mountain species of *Anisolotus* are :

Anisolotus Wrightii (A. Gray) Rydb.

Hosackia Wrightii A. Gray, Pl. Wright. 2 : 42. 1853.

Anisolotus brachycarpus (Benth.) Rydb.

Hosackia brachycarpa Benth. Pl. Hartw. 306. 1848.

Lotus huministratus Greene, Pittonia 2 : 139. 1890.

Anisolotus rigidus (Benth.) Rydb.

Hosackia rigida Benth. Pl. Hartw. 305. 1848.

Aragallus Hallii (Bunge) Rydb.

Oxytropis Hallii Bunge, Mem. Acad. Sci. St. Petersb. VII. 22¹ :
162. 1874.

Vicia dissitifolia (Nutt.) Rydb.

Lathyrus dissitifolius Nutt.; T. & G. Fl. N. Am. 1 : 277. 1838.

Lathyrus incanus (Rydb. & Smith) Rydb.

Lathyrus ornatus incanus Rydb. & Smith, Fl. Neb. 21 : 64. 1895.

Chamaesyce flabelliformis (Engelm.) Rydb.

Euphorbia petaloidea flagelliformis Engelm. Bot. Mex. Bound.
185. 1859.

Euphorbia flagelliformis Engelm. Bull. Geol. Surv. Terr. 2 : 243.
1876.

Chamaesyce rugulosa (Engelm.) Rydb.

Euphorbia serpyllifolia rugulosa Engelm.; Millsp. Pittonia 2: 85.
1890.

Chamaesyce albicaulis Rydb.

Euphorbia albicaulis Rydb. Mem. N. Y. Bot. Gard. 1: 266. 1900.

Tithymalus arkansanus coloradensis (Norton) Rydb.

Euphorbia arkansana coloradensis Norton, Rep. Missouri Bot.
Gard. 11: 105. 1900.

Sida sagittaeifolia (A. Gray) Rydb.

Sida lepidota sagittaeifolia A. Gray, Pl. Wright. 1: 18. 1852.

Sphaeralcea marginata York, sp. nov.

Perennial, herbaceous; stem usually branching from the base, with ascending branches, 2–6 dm. tall, densely stellate-canescens; leaf-blades subrotund, rounded-ovate or subcordate, 1.5–4 cm. long, 1.5–3 cm. wide, cordate or truncate at the base, crenate or imperfectly dentate, slightly 3–5-lobed, the middle lobe acute or obtuse, the upper surface with close stellate pubescence, more densely pubescent beneath, petioles less than $\frac{1}{2}$ as long as the blades or sometimes longer; flowers borne in narrow panicles; involucre of 3 small setaceous bracts: calyx-tube densely stellate-pubescent, about 3 mm. long; lobes 5, ovate, acute or acuminate, almost glabrous or sparingly stellate-pubescent on dorsal surface, densely pubescent on the margin, glabrous within, 2–3 mm. long, in fruit 4–5 mm. long; petals pink, obovate, 10–12 mm. long; carpels 10–12 in number, 3–4 mm. long, cuspidate, the lower half reticulated; ovules two; usually only one seed developed in the lower part of each carpel, upper part somewhat aborted; seeds reniform, glabrous.

In general appearance this plant resembles *Sphaeralcea Munroana* (Doug.) Spach; but in the former, the mature carpels separate from the central axis by a small thread attached to the base of each carpel, while in the latter, the carpels do not separate from the central axis by a thread. *Sphaeralcea marginata* also resembles *S. incana* Torr.; but the latter is taller, the leaves are larger, the pubescence on both sides of the leaves is much denser and finer, the paniculate clusters of flowers are longer and more open and the carpels are nearly always two-seeded.

COLORADO : Grand Junction, 1901, *C. F. Baker* 93 (type); also 1893, *De Alton Saunders*; McElmo Cañon, 1901, *F. K. Vreeland* 860.

NEW MEXICO : 1901, *F. K. Vreeland* 823.

Cactus similis (Engelm.) Rydb.

Mamillaria similis Engelm. Bost. Jour. Nat. Hist. **5** : 246. 1845.

Mamillaria missouriensis caespitosa S. Wats. Bibl. Index 403. 1878.

Echinocereus aggregatus (Engelm.) Rydb.

Mamillaria aggregata Engelm. in Emory, Notes Recon. 157. 1848.

Echinocereus coccineus Engelm. Wislitz. Rep. 9. 1848. Not *E. coccineus* DC.

Cereus phoeniceus Engelm. Proc. Am. Acad. **3** : 284. 1856.

Echinocereus Roemerii (Muhlenf.) Rydb.

Cereus Roemerii Muhlenf. Allg. Gart. Zeit. **16** : 19. 1848.

Cereus conoideus Engelm. Pac. R. R. Rep. **4** : 35. 1856.

Epilobium adenocladon (Haussk.) Rydb.

Epilobium paniculatum adenocladon Haussk. Mon. Gatt. Epil. 247. 1884.

Anogra latifolia Rydb.

Oenothera pallida latifolia Rydb. Contr. U. S. Nat. Herb. **3** : 159. 1895.

Pachylophus marginatus (Nutt.) Rydb.

Oenothera marginata Nutt.; Hook. & Arn. Bot. Beechey 342. 1838.

Oenothera idahoensis Mulford, Bot. Gaz. **19** : 117. 1894.

Sphaerostigma pubens (S. Wats.) Rydb.

Oenothera strigulosa pubens S. Wats. Proc. Am. Acad. **8** : 594. 1873.

Sphaerostigma minutiflora (S. Wats.) Rydb.

Oenothera alyssoides minutiflora S. Wats. Proc. Am. Acad. **8** : 591. 1873.

CORNELLA Rydb. gen. nov.

The type of the genus *Cornus* L. is *C. mas* L. which has no congener in this country, except perhaps *C. sessilis* Torr. of California. Opiz segregated from *Cornus* the genus *Svida*, to which the European *C. sanguinea* and most of our American cornels belong. Rafinesque in his *Alsographia Americana* made the genus *Cynoxylon* based on *C. florida* L., and also another genus (or subgenus) *Eukrania* in which he placed *C. canadensis* L. and *C. suecica* L. Unfortunately he made *C. mascula* of Europe, which is congeneric with and some claim the same as *C. mas* L., the type, and *C. canadensis* and *C. suecica* have no available generic name, unless they are included with *C. florida* and *C. Nuttallii* in *Cynoxylon*. Outside of the great difference in habit and fruit between the Dwarf Cornels and the Flowering Dogwoods, the former have one character not found in any of the groups usually included in *Cornus*. The sepals of the Dwarf Cornels have a small horn-like, at last deciduous, spine on the back near the apex. This, together with the peculiar habit, makes them deserve generic rank.

Cornella canadensis (L.) Rydb.

Cornus canadensis L. Sp. Pl. 118. 1753.

Cornella suecica (L.) Rydb.

Cornus suecica L. Sp. Pl. 118. 1753.

Cornella unalaschkensis (Ledeb.) Rydb.

Cornus unalaschkensis Ledeb. Fl. Ross. 2: 378. 1844.

Pseudocymopterus multifidus Rydb.

Pseudocymopterus montanus multifidus Rydb. Bull. Torrey Club
31: 574. 1904.

Pseudocymopterus purpureus (C. & R.) Rydb.

Pseudocymopterus montanus purpureus C. & R. Rev. N. Am.
Umbell. 75. 1888.

Pseudocymopterus tenuifolius (A. Gray) Rydb.

Thaspium montanum tenuifolium A. Gray, Pl. Wright. 2: 65.
1853.

Ligusticum montanum tenuifolium S. Wats. Bibl. Index 426.
1878.

Vaccinium oreophilum Rydb.

Vaccinium myrtilloides S. Wats. Bot. King Exp. 209. 1871. Not
V. myrtilloides Michx. 1803.

Vaccinium Myrtillus A. Gray, Syn. Fl. 2¹: 24. 1878. Not *V.*
Myrtillus L. 1753.

The American plant has depressed globular-ovoid corolla,
fully as wide as long, while the original European *V. Myrtillus* has
ovoid-urceolate corolla, decidedly longer than broad.

Androsace subulifera (A. Gray) Rydb.

Androsace septentrionalis subulifera A. Gray, Syn. Fl. 2¹: 60.
1878.

Dodecatheon sinuatum Rydb.

Dodecatheon radiculatum sinuatum Rydb. Bull. Torrey Club 31 :
631. 1904.

Erythraea arizonica (A. Gray) Rydb.

Erythraea calycosa arizonica A. Gray, Syn. Fl. 2¹: 113. 1878.

Anthopogon elegans (A. Nels.) Rydb.

Gentiana elegans A. Nels. Bull. Torrey Club 25 : 276. 1898.

Anthopogon barbellatus (Engelm.) Rydb.

Gentiana barbellata Engelm. Trans. Acad. St. Louis 2 : 216. 1863.
Gentiana Moseleyi A. Nels. Bot. Gaz. 31 : 396. 1901.

Amarella monantha (A. Nels.) Rydb.

Gentiana tenella A. Gray, Syn. Fl. 2¹: 117, in part. 1878.
Gentiana monantha A. Nels. Bull. Torrey Club 31 : 244. 1904.

Amarella plebeia Holmii (Wettst.) Rydb.

Gentiana plebeia Holmii Wettst. Oester. Bot. Zeitsch. 50 : 195.
1900.

Dasystephana Romanzovii (Ledeb.) Rydb.

Gentiana Romanzovii Ledeb.; Bunge, Nouv. Mém. Soc. Nat. Mosc.
1 : 215. 1829.

Gentiana frigida A. Gray, Syn. Fl. 2¹: 120. 1878. Not *G. frigida* Haenke. 1788.

Dasystephana Parryi (Engelm.) Rydb.

Gentiana Parryi Engelm. Trans. Acad. St. Louis 2: 218. 1863.

Dasystephana affinis (Griseb.) Rydb.

Gentiana affinis Griseb. Gen. et Sp. Gent. 289. 1839.

Dasystephana Forwoodii (A. Gray) Rydb.

Gentiana Forwoodii A. Gray, Syn. Fl. 2¹: 406. [Ed. 2.] 1886.

Dasystephana Bigelovii (A. Gray) Rydb.

Gentiana Bigelovii A. Gray, Syn. Fl. 2¹: 406. [Ed. 2.] 1886.

Dasystephana interrupta (Greene) Rydb.

Gentiana interrupta Greene, Pittonia 4: 182. 1900.

Frasera scabra (M. E. Jones) Rydb.

Frasera speciosa scabra M. E. Jones, Zoe 4: 277. 1893.

Frasera stenosepala Rydb.

Frasera speciosa stenosepala Rydb. Bull. Torrey Club 31: 632. 1904.

Frasera angustifolia Rydb.

Frasera speciosa angustifolia Rydb. Bull. Torrey Club 31: 632. 1904.

Phlox depressa (E. Nels.) Rydb.

Phlox multiflora depressa E. Nels. Rev. W. N. Am. Phloxes 20. 1899.

Leptodactylon Watsonii (A. Gray) Rydb.

Gilia Watsonii A. Gray, Proc. Am. Acad. 8: 267. 1870.

Leptodactylon Nuttallii (A. Gray) Rydb.

Gilia Nuttallii A. Gray, Proc. Am. Acad. 8: 267. 1870.

Phacelia ciliosa Rydb.

Phacelia sericea ciliosa Rydb. Bull. Torrey Club 31: 636. 1904.

Oreocarya hispidissima (Torr.) Rydb.

Eritrichium glomeratum hispidissimum Torr. Bot. Mex. Bound.
140. 1859.

Oreocarya perennis (A. Nels.) Rydb.

Oreocarya affinis perennis A. Nels. Erythea 7: 67. 1899.

Mertensia platensis Rydb.

Mertensia polyphylla platensis Rydb. Bull. Torrey Club 31: 638.
1904.

Agastache pallidiflora (Heller) Rydb.

Brittonastrum pallidiflorum Heller, Bull. Torrey Club 26: 621.
1899.
Brittonastrum Greenei Briquet, Ann. Conserv. & Jard. Genève 6:
157. 1902.

Madronella parvifolia (Greene) Rydb.

Monardella parvifolia Greene, Pl. Baker. 3: 22. 1901.

Madronella dentata Rydb.

Monardella dentata Rydb. Bull. Torrey Club 31: 641. 1904.

Mentha Penardi (Briquet) Rydb.

Mentha arvensis Penardi Briquet, Bull. Herb. Boiss. 3: 215. 1895.

Androcera rostrata (Dunal) Rydb.

Solanum rostratum Dunal, Hist. Sol. 234. 1813.
Androcera lobata Nutt. Gen. Am. 1: 129. 1818.

Pentstemon unilateralis Rydb. nom. nov.

Pentstemon secundiflorus A. Gray, Syn. Fl. 2¹: 263. 1878. Not
P. secundiflorus Benth.

In Proc. Am. Acad. 6: 61, Dr. Gray gives *P. secundiflorus* as a synonym of *P. acuminatus* Benth. This was correct as far as Dr. Gray's conception of the latter is concerned. Dr. Gray included in *P. acuminatus* at least four different plants. Of these, two have very broad rounded clasping and abruptly acuminate upper leaves,

viz.: the original *P. acuminatus* Dougl. and my *P. cyathophorus*; and two with lanceolate upper leaves, viz.: *P. Fendleri* A. Gray and the original *P. secundiflorus* Benth. Frémont's plant, the type of the latter, is in the Torrey herbarium. On the sheet is written in Dr. Gray's own handwriting: "This is only *P. acuminatus*, Dougl.; small. A. G. 1862." Dr. Gray afterwards transferred the name *P. secundiflorus* to an entirely different plant, describing it in the Synoptical Flora. This therefore needs a new name.

***Pentstemon angustifolius caudatus* (Heller) Rydb.**

Pentstemon caudatus Heller, Minn. Bot. Stud. 2: 34. 1898.

P. caudatus Heller is in my opinion the southern more luxuriant and broad-leaved form of *P. angustifolius*. The two grade absolutely into each other in Colorado.

***Pentstemon trichander* (A. Gray) Rydb.**

Pentstemon barbatus trichander A. Gray, Proc. Am. Acad. 11: 94. 1876.

This, as well as *P. Torreyi* Benth., I think should be kept distinct from *P. barbatus* (Cav.) Nutt. of Mexico.

MYZORRHIZA Phil. Linnaea 29: 36. 1857.

The NOTHAPHYLLON subgenus of *Aphyllon* as limited in Gray's Synoptical Flora has been shifted back and forth between the genera *Phelipaea*, *Anoplanthus* and *Aphyllon*, and has lately been restored to *Orobanche*, where its original species were described. The typical species of *Orobanche* have a bilabiate calyx, while the species here discussed have a 5-parted one. As far as I find, the only genus described to which they can be referred is the one given above. The following two species are found in Colorado:

***Myzorrhiza ludoviciana* (Nutt.) Rydb.**

Orobanche ludoviciana Nutt. Gen. Am. 2: 58. 1818.

Aphyllon ludovicianum A. Gray, Bot. Calif. 1: 585. 1876.

***Myzorrhiza multiflora* (Nutt.) Rydb.**

Orobanche multiflora Nutt. Jour. Acad. Nat. Sci. Phila. II. 1: 179. 1848.

Aphyllon multiflorum A. Gray, Bot. Calif. 1: 585. 1876.

Galium subbiflorum (Wieg.) Rydb.

Galium trifidum subbiflorum Wieg. Bull. Torrey Club **24**: 399.
1897.

Distegia involucrata (Richardson) Rydb.

Xylosteum involucratum Richardson, Frankl. Journey 733. 1823.
Lonicera involucratum Banks; Spreng. Syst. **1**: 759. 1825.
Distegia nutans Raf. New Fl. Am. **3**: 21. 1836.

Chrysothamnus serrulatus (Torr.) Rydb.

Linosyris serrulata Torr.; Stansbury, Expl. 389. 1852.
Chrysothamnus glaucus A. Nelson, Bull. Torrey Club **25**: 377.
1898.

Chrysothamnus latifolius (D. C. Eaton) Rydb.

Linosyris viscidiflora latifolia D. C. Eaton, Bot. King Exp. 157.
1871.
Bigelevia Douglasii latifolia A. Gray, Proc. Am. Acad. **8**: 646.
1873.

Isocoma Wrightii (A. Gray) Rydb.

Linosyris Wrightii A. Gray, Pl. Wright. **1**: 95. 1852.
Bigelevia Wrightii A. Gray, Proc. Am. Acad. **8**: 639. 1873.

OREOCHRYSUM Rydb. gen. nov.

Plants with slender horizontal rootstock, leafy, viscid-puberulent above. Involucral bracts oblong, pale, rather obscurely 1-ribbed, chartaceous or the outer foliaceous, in about three moderately unequal ranks. Rays several, short. Disc-corollas narrowly trumpet-shaped, deeply 5-toothed. Style-appendages lanceolate, longer than the stigmatic portion. Achenes angled. Pappus white or slightly tawny, of soft scabrous bristles.

When Dr. Greene made his segregations of the old genus *Aplopappus*, he transferred the type of the genus here proposed to *Solidago*, but it is just as much out of place here as among its old associations, *i. e.*, the present genus *Stenotus*. It is true that in general habit it reminds one of a group of species formerly included in *Solidago*, but now segregated as a genus *Oligoneuron* Small; the character of the involucre and the style-appendages, however, distinguish it from *Oligoneuron* as well as from *Solidago* proper.

Oreochrysum Parryi (A. Gray) Rydb.

Aplopappus Parryi A. Gray, Am. Jour. Sci. II. **33**: 239. 1862.

Solidago Parryi Greene, Erythea **2**: 57. 1894.

Solidago pallida (Porter) Rydb.

Solidago speciosa pallida Porter, Bull. Torrey Club **19**: 130. 1892.

Solidago scabriuscula (Porter) Rydb.

Solidago canadensis scabra T. & G. Fl. N. Am. **2**: 224. 1842.

Not *S. scabra* Willd.

Solidago canadensis scabriuscula Porter, Mem. Torrey Club **5**: 318. 1894.

Solidago gilvocanescens Rydb.

Solidago canadensis gilvocanescens Rydb. Contr. U. S. Nat. Herb. **3**: 162. 1895.

Aster polycephalus Rydb.

Aster scoparius DC. Prodr. **5**: 242. 1836. Not *A. scoparius* Nees. 1832.

Leucelene serotina (Greene) Rydb.

Leucelene ericoides serotina Greene, Pittonia **3**: 149. 1896.

Leucelene hirtella (A. Gray) Rydb.

Diplopappus ericaefolius hirtella A. Gray, Mem. Am. Acad. **4**: 69. 1849.

Erigeron Wootonii Rydb.

Erigeron cinereus var. γ A. Gray, Mem. Am. Acad. **4**: 68. 1849.

ESCHENBACHIA Moench, Meth. 573. 1794.

Conyza Less. Syn. Comp. 203, in part. 1832. Not *Conyza* (Tourn.) L. 1753.

The type of the Linnaean genus *Conyza* is *Conyza squarrosa* L. but this as well as most of the original species are now included in *Inula*. Lessing transferred the name *Conyza* to an entirely different group of plants. Dr. Greene united our North American species with some species of *Erigeron* into the genus *Conyzella* Rupr.

(1869), which is antedated by *Leptilon* Raf. (1818). Hence *Conyzella* becomes a synonym. I do not think that *Conyza Coulteri* should be included in *Leptilon*, which it resembles in habit but not in the composition of the heads. It has several relatives in Mexico and Central America as well as in the Old World. The oldest available name for these is, if I am not mistaken, *Eschenbachia* Moench.

***Eschenbachia Coulteri* (A. Gray) Rydb.**

Conyza Coulteri A. Gray, Proc. Am. Acad. **7**: 355. 1868.

BERTHELOTIA DC. Prodr. **5**: 375. 1836.

A sericeous composite shrub of the southwestern United States has been variously referred to *Pluchea* and *Tessaria*, but is rather out of place in either genus. It was originally made a genus by itself, *Polypappus*, by America's keenest botanist, Thomas Nuttall, and I think it should have remained a genus distinct from both *Pluchea* and *Tessaria*. It has evidently a congener, however, in the desert regions of the Orient. This was described by De Candolle as *Berthelotia*.

***Berthelotia sericea* (Nutt.) Rydb.**

Polypappus sericeus Nutt. Jour. Acad. Nat. Sci. Phila. II. **1**: 178. 1848.

Tessaria borealis "DC.;" T. & G. in Emory, Notes Recon. 143. 1848.

Pluchea borealis A. Gray, Proc. Am. Acad. **17**: 212. 1882.

***Ximenesia exauriculata* (Rob. & Greenm.) Rydb.**

Verbesina encelioides exauriculata Rob. & Greenm. Proc. Am. Acad. **34**: 544. 1899.

PLATYSCHKUHRIA (A. Gray) Rydb. gen. nov.

Schkuhria § *Platyschkuhria* A. Gray, Am. Nat. **8**: 213. 1874.

Bahia § *Platyschkuhria* A. Gray, Syn. Fl. **2**¹: 332. 1884.

The genus *Bahia* as limited in Gray's Synoptical Flora is a rather unnatural one. The group most unlike the rest is the one constituting the section *Platyschkuhria*, which I think deserves generic rank. I adopt the sectional name, although its etymology and form are rather bad.

Platyschkuhria integrifolia (A. Gray) Rydb.

Schkuria integrifolia A. Gray, Am. Nat. 8: 213. 1874.

Bahia nudicaulis A. Gray, Proc. Am. Acad. 19: 27. 1883.

Platyschkuhria oblongifolia (A. Gray) Rydb.

Bahia oblongifolia A. Gray, Proc. Am. Acad. 19: 27. 1883.

Tetraneuris glabriuscula Rydb.

Tetraneuris glabra Greene, Pittonia 3: 268, in part. 1898. Not

Actinella glabra Nutt. 1841.

What *Actinella glabra* Nutt. was is not exactly known. It is not, however, the plant for which Dr. Greene adopted the name *Tetraneuris glabra*. If it is a *Tetraneuris* at all, it must be a species related to *T. Ivesiana*, *T. argentea* and *T. leptoclada*, as it is described as having stem-leaves. None of these grows near the original locality of *A. glabra*, viz., Shawnee villages on the Missouri (near Kansas City). The only species that are found within 300 miles from this station are *T. herbacea* Greene of Illinois, and *T. fastigiata* Greene and the following from central and western Kansas. None of these answers the description.

Tetraneuris stenophylla Rydb.

Perennial with a branched caudex, the branches of which are partly subterranean, 2-10 cm. long; leaves basal, very narrowly linear-oblongate, 2-4 cm. long, 1-2 mm. wide, strongly punctate, glabrous or with a few long hairs near the base; bases dilated and scarious-margined, only slightly long-hairy; scape 5-10 cm. long, striate, punctate and sparingly strigose; involucre about 5 mm. high and 10 mm. wide, hemispheric; bracts elliptic, obtuse; rays light-yellow, about 10 mm. long and 5 mm. wide, 3-4-toothed and 5-7-nerved.

This is closest related to *T. fastigiata* Greene, in which, however, the bases of the leaves are arachnoid-hairy and the involucre densely villous.

KANSAS: Ford County, 1891, *L. D. Ellis* (type).

COLORADO: Banks of Cimarron, 1860, *Newberry*.

CHAMAECHAENACTIS Rydb. gen. nov.

Cespitose scapiferous perennial, branching below the surface of the ground and with a woody root. Leaves all basal and simple,

coriaceous, white-strigose below, sparingly hirsute and punctate above. Involucral bracts about twelve, in two series; the inner series longer and with scarious-margined reddish tips. Corolla flesh-colored, with equal lobes. Stamens included. Style-lips broad. Achenes clavate, densely villous. Pappus of eight nearly equal scales, with prominent midrib and erose tips.

Miss Eastwood, the discoverer of the plant, referred it to *Chaenactis*, to which it is not closely related, resembling this genus only in the color of the corolla. The structure of the fruit and pappus would place it nearer *Bahia* and *Tetraneuris*. In general habit it resembles most that exceedingly rare plant described by Nuttall under the name *Bolophyta alpina*, which by Dr. Gray was transferred to *Parthenium*.

Chamaechaenactis scaposa (Eastw.) Rydb.

Chaenactis scaposa Eastw. Zoe 2 : 231. 1891.

Rydbergia Brandegei (A. Gray) Rydb.

Actinella grandiflora glabrata Porter, in Port. & Coult. Syn. Fl. Colo. 76. 1874.

Actinella Brandegei Porter; A. Gray, Proc. Am. Acad. 13 : 373. 1878.

Rydbergia glabrata Greene, Pittonia 3 : 270. 1898.

Hymenoxys macrantha (A. Nels.) Rydb.

Picradenia macrantha A. Nels. Bot. Gaz. 28 : 130. 1899.

Hymenoxys Richardsonii macrantha Cockerell, Bull. Torrey Club 31 : 475. 1904.

Evidently Professor Cockerell was correct in uniting *Hymenoxys* and *Picradenia* under the older generic name. To his conception of species I am not willing to assent, however. In this respect I would rather agree with Dr. Greene and Prof. Aven Nelson. The changes in nomenclature of the Colorado species are here given.

Hymenoxys pumila (Greene) Rydb.

Picradenia pumila Greene, Pittonia 3 : 271. 1898.

Hymenoxys Richardsonii pumila Cockerell, Bull. Torrey Club 31 : 472. 1904.

Hymenoxys multiflora (Buckley) Rydb.

- Phileozeria multiflora* Buckley, Proc. Acad. Nat. Sci. Phila. **1861** : 459. 1862.
Picradenia multiflora Greene, Pittonia **3** : 273. 1898.
Hymenoxys chrysanthemoides multiflora Cockerell, Bull. Torrey Club **31** : 507. 1904.

Hymenoxys multiflora Osterhoutii (Cockerell) Rydb.

- Picradenia odorata Osterhoutii* Cockerell, Bull. Colo. College Mus. **11 D** 1903.
Hymenoxys chrysanthemoides Osterhoutii Cockerell, Bull. Torrey Club **31** : 505. 1904.

Achillea alpicola Rydb.

- Achillea lanulosa alpicola* Rydb. Mem. N. Y. Bot. Gard. **1** : 426. 1900.

Artemisia Scouleriana (Besser) Rydb.

- Artemisia desertorum Scouleriana* Besser ; Hook. Fl. Bor. Am. **1** : 325. 1833.

Artemisia pabularis (A. Nels.) Rydb.

- Artemisia rhizomata pabularis* A. Nelson, Bull. Torrey Club **27** : 34. 1900.

Artemisia viscidula (Osterhout) Rydb.

- Artemisia cana viscidula* Osterhout, Bull. Torrey Club **27** : 507. 1900.

Carduus filipendulus (A. Gray) Rydb.

- Cirsium virginianum filipendulum* A. Gray, Man. ed. 5. 273. 1880.
Cirsium filipendulum Engelm.; A. Gray, *loc. cit.*, as a synonym.
Cnicus altissimus filipendulus A. Gray, Proc. Am. Acad. **19** : 57. 1883.

Senecio Flintii Rydb. sp. nov.

Perennial with a cluster of fibrous-fleshy roots ; stem about 3 dm. high, striate, sparingly arachnoid-hairy ; basal leaves about 8 cm. long ; blades orbicular or rounded-oval, abruptly con-

tracted into short petioles, sparingly arachnoid when young, glabrous and rather thick in age; stem-leaves lanceolate, sinuately toothed, auricled and clasping at the base, arachnoid when young; inflorescence small, with 3–6 heads, which are about 1 cm. high; bracts linear, 7–8 mm. long, abruptly acute at the apex, with a triangular black tip; rays light-yellow, broad; achenes striate, glabrous.

Related to *S. exaltatus* and *S. integerrimus*, but differing from the former in the entire basal leaves and small corymb, from the latter in the abruptly acute black-tipped bracts, and from both in the lower stature and the broader basal leaves.

SOUTHWESTERN COLORADO: *W. F. Flint*.

***Senecio Harbourii* Rydb. sp. nov.**

Perennial with a branched caudex; stem 1–2 dm. high, striate, white-floccose, leafy; basal leaves and most stem-leaves petioled, 3–10 cm. long, densely white-floccose; blades oblanceolate or linear-spatulate, entire; uppermost stem-leaves sessile, lanceolate, 1–3 cm. long, more or less auricled at the base; inflorescence corymbiform, with 2–7 heads, which are mostly 10–15 mm. high; bracts narrowly linear, long-attenuate, light yellowish-green and slightly floccose; the calyculate ones minute, subulate; rays bright-yellow, over 1 cm. long and 2 mm. wide; achenes brown, shining, glabrous, angled.

This species is most nearly related to *S. Purshianus* and *S. canus*. From the former it differs in the large heads, longer rays and more leafy stem, and from the latter in the lower habit, narrower and always entire leaves, and the turbinate-campanulate instead of hemispheric heads. It grows in the mountains of Colorado at an altitude of 2700–4000 m., and was first collected by Hall & Harbour.

COLORADO: Mountains south of Ward, Boulder Co., July 18, 1901, *G. E. Osterhout 2424* (type); mountains between Sunshine, and Ward, 1902, *F. Tweedy 4861*; Silver Plume, Aug. 24, 1895, *C. L. Shear 4599*; also at the same date and locality, *P. A. Rydberg*.

***Senecio oodes* Rydb. sp. nov.**

Perennial, with a stout rootstock and caudex; stem 3–4 dm. high, slightly floccose below, branched; basal leaves long-petioled, loosely villous-floccose when young, in age glabrous; petioles

4-9 cm. long; blades thick, oval, 3-6 cm. long, 1.5-4 cm. wide, rounded or obtuse at the apex, abruptly contracted below, coarsely dentate-crenate with triangular-ovate, obtuse teeth; lower stem-leaves similar, the petioles with enlarged toothed or lobed stipule-like bases; the upper short-petioled and narrower; inflorescence corymbiform; heads many, about 1 cm. high; bracts linear, abruptly acute, 5-7 mm. long, slightly villous; rays bright-yellow, 1-12 mm. long, about 2 mm. wide; achenes glabrous, round-angled.

This is perhaps most closely related to *S. cymbalarioides*, but differs in the stouter, more branched and more leafy stem and the large ample stem-leaves. It grows in the higher mountains of Colorado.

COLORADO: Mt. Harvard, 1896, *F. E. Clements* 39 (type); Robinson, Aug. 23, 1896, *C. L. Shear* 3333.

Senecio Tracyi Rydb.

Perennial with a short rootstock; stem about 4 dm. high, glabrous; basal leaves glabrous, long-petioled; petioles 3-10 cm. long, slender; blades round-oval or oval, thin, 1.5-5 cm. long, 1-3 cm. wide, entire or merely wavy, rounded at the apex, rounded, truncate or subcordate at the base; stem-leaves lanceolate, acuminate, 2-6 cm. long or the uppermost still smaller, sinuate-crenate, the lower cuneate at the base, the upper auriculate-clasping; inflorescence a small compact cyme; heads 8-11, broadly turbinate, 6-7 mm. high; bracts linear, abruptly acute, glabrous, the calyculate ones subulate, sparingly arachnoid; rays yellow, 6-8 mm. long, about 2 mm. wide.

The species belongs to the *S. aureus* group and is somewhat intermediate between *S. crocatus*, *S. pyrrochrous* and *S. fedifolius*. From the two first it differs in the paler rays and the form of the stem-leaves and from the last in the much larger size and the presence of rays. It grows at an altitude of 3150 m.

COLORADO: Bob Creek, west of Mt. Hesperus, July 1, 1898, *Baker, Earle & Tracy* 276.

Senecio turbinatus Rydb. sp. nov.

Perennial with a caespitose rootstock; stem scapiform, about 1.5 dm. high, more or less floccose; basal leaf-blades cuneate-obovate, thick, 2-3 cm. long, 8-18 mm. wide, loosely floccose when young, dentate above the middle, rounded at the apex,

tapering below into petioles about 3 cm. long; inflorescence corymbiform; heads about 4, about 12 mm. high; involucre obconic-turbinate, floccose at the base; bracts linear, gradually acute; rays pale-yellow, 8-9 mm. long, 3 mm. wide.

This species is probably most closely related to *S. pentodontus*, but distinguished by the peculiar involucre, which tapers gradually into the peduncles.

COLORADO: Lake City, 1878, *H. N. Pease*.

Senecio multicapitatus Greenman, sp. nov.

Perennial with a thick woody root; stem 4-10 dm. high, yellowish, glabrous, branched and broom-like, leafy; leaves irregularly pinnately dissected into linear-filiform lobes, 1-1.5 mm. wide, or the upper simple and linear-filiform, somewhat fleshy, glabrous and yellowish-green; heads in a corymbiform inflorescence, numerous, almost cylindric, 7-8 mm. high, about 4 mm. in diameter; bracts 8-10, yellowish, linear, gradually acute, glabrous and shining; calyculate ones small, subulate; rays pale-yellow, 7-8 mm. long and 2 mm. wide; achenes striate, grayish strigose-hispidulous.

This species has been included in *S. Douglasii*, which has long calyculate bracts and is confined to the west coast. *S. multicapitatus* resembles closely *S. Riddellii* in habit, but differs in the narrow heads and few bracts. In *S. Riddellii* the bracts are 12-15 and the involucre campanulate. *S. multicapitatus* grows on plains and in mountain valleys of Colorado, New Mexico, and Arizona.

COLORADO: Huerfano Valley, near Gardner, 1900, *F. R. Vreeland* 651; Mt. Princeton Station, 1901, *Underwood & Selby* 465.

NEW MEXICO: Gray, Lincoln Co., *F. S. Earle & Ester S. Earle*; high plains north of El Capitan Mountains, *F. S. Earle & Ester S. Earle* 388.

ARIZONA: Holbrook, 1896, *Myrtle Zuck*.

PRENANTHELLA Rydb. gen. nov.

Low diffusely branched annuals, with numerous small heads terminating the branches. Lower leaves ample, oblong or spatulate in outline, more or less runcinate; the upper reduced and bract-like. Involucres oblong, 4-5-flowered with as many oblong bracts and 1 or 2 small calyculate ones. Achenes gradually tapering downward from the truncate summit, 4-5-ridged. Pappus of white soft capillary bristles.

The species on which this genus is based was first described as a *Prenanthes* and later transferred to *Lygodesmia*. It is so unlike the other species of *Lygodesmia* in habit, that the habit alone would suggest a distinct genus. But the best character is found in the achenes, which are ribbed and tapering downward from the summit instead of upwards from the base. The fruit agrees better with that of *Nabalus* (*Prenanthes*), but from this genus *Prenanthella* is distinguished by the habit and the structure of the involucre.

***Prenanthella exigua* (A. Gray) Rydb.**

Prenanthes exigua A. Gray, Pl. Wright. 2: 105. 1853.

Lygodesmia exigua A. Gray, Proc. Am. Acad. 9: 217. 1874.

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